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The implementation of the Department of Defense managed care program entitled TRICARE has provided the military health service system a new set of challenges. The significant question and problem faced by medical treatment facility commanders is the determination of how many beneficiaries to empanel in their facilities' primary care networks. The model described in this study provides the commander with the elements necessary to determine the primary care network's total likely capacity to accomodate visits as well as the population's demand for them. From these two pieces of information the facility commander can determine the number of beneficiaries to empanel in the primary care network. This model also estimates the additional demand that results from moral hazard in a military treatment facility, as a consequence of providing health care at a insignificant cost to the patient.

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GRADUATE PROGRAM IN HEALTH CARE ADMINISTRATION

AN EMPANELMENT MODEL FOR USE BY MEDICAL TREATMENT FACILITIES WITHIN THE MILITARY HEALTH SERVICES SYSTEM

A GRADUATE MANAGEMENT PROJECT

SUBMITTED TO

THE FACULTY OF BAYLOR UNIVERSITY

IN PARTIAL FULFILLMENT OF THE

DEGREE OF

MASTER OF HEALTH ADMINISTRATION

BY

LIEUTENANT COLONEL MARGARET RIVERA

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ABSTRACT

The implementation of the Department of Defense managed care program entitled TRICARE has provided the military health service system a new set of challenges. For the first time in military medical history the medical departments must compete with civilian counterparts relative to cost. Beneficiaries will be empaneled in their option of choice much as health maintenance organizations are doing in the civilian community. The significant question and problem faced by medical treatment facility commanders is the determination of how many beneficiaries to empanel in their facilities' primary care networks. TRICARE affords the military treatment facility commander a unique opportunity to fill the primary care network based on the available visits, or supply, instead of attempting to meet an unmatched demand. In order to do this, however, the facility commander must know how many patient visits could be accomodated and what the demand for those appointments would be.

The model described in this study provides the commander with the elements necessary to determine the primary care network's total likely capacity to accomodate visits as well as the population's demand for them. From these two pieces of information the facility commander can determine the number of beneficiaries to empanel in the primary care network. This model also estimates the additional demand that results from moral hazard in a military treatment facility, as a consequence of providing health care at a insignificant cost to the patient.

The results of this study revealed the number of beneficiaries to be empaneled or the total number of patients that could be seen at William Beaumont Army Medical Center in Fiscal Year 1996 given the specific catchment area demographics and the facility specific constraints.

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CHAPTER 1
INTRODUCTION

Since 1940, national health care expenditures have grown at a rate that has outpaced the gross national product. Experts predict that health care expenditures will reach $1.6 trillion, or 16.4 percent of the gross national product in the year 2000 (Sonnefeld et al. 1991). Of these expenditures, 42 percent are financed by federal, state, or local government. The federal government accomplishes this, in part, through three health care systems: the U.S. Public Health Service, the Department of Veterans Affairs, and the military health service system (Williams and Torrens 1993).

The military health service system (MHSS) includes all fixed facilities run by the U.S. Army, U.S. Navy, and U.S. Air Force and provides health care to approximately nine million beneficiaries (Williams et al. 1994). These facilities include teaching and non-teaching medical centers, community hospitals, clinics, dental activities, and veterinary support activities.

Over the last 15 years, health care expenditures within the Department of Defense (DOD) mimicked national health care spending and consumed an ever increasing proportion of the defense budget. Throughout most of this

period, the MHSS, comprised of military treatment facilities and the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS)[1], lacked the incentives to control expenditures. Recently however, the combination of the increasing health care budget, the simultaneous shrinking of the overall defense budget, and the demands for national health care reform led the DOD to look for cost saving opportunities in managed care. As a result, on October 1, 1993, the military health care system began implementation of a major health care reform program known as TRICARE (Department of Defense 1994).

TRICARE is a comprehensive medical program structured as a regionalized, contractor-supported managed care system. This program leaves managerial control with the MHSS, but uses civilian health care resources to complement the shrinking military medical resources (Noyes 1995).

BACKGROUND

In order to understand the impact of managed care on the MHSS, it is important to review how the MHSS had been providing and resourcing health care prior to 1993. Since the 1950s the MHSS used weighted workload units to describe

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[1]Civilian Health and Medical Program of the Uniformed Services is a traditional fee-for-service insurance program to finance private sector care for dependents of active duty members; and retirees, survivors, and their dependents.

system outputs. Resources were based on the number of outputs produced, thus rewarding increased workload. Simply stated, the more beneficiaries hospitalized and the more beds filled, the larger the facility's staffing and budget (Williams et al. 1994). In 1984, military health care consumed 2.8 percent of the defense budget. By 1990 this had increased to 4.8 percent; a total of $14.11 billion (Congressional Budget Office 1991). Overall, the most significant expenditures were associated with CHAMPUS, which soared from $852 million in Fiscal Year (FY) 1981 to approximately $2.5 billion in FY 88 (Badgett 1990). Consequently in 1988, in an effort to control CHAMPUS expenditures, Congress allocated the CHAMPUS budget directly to each military department and held each department accountable for its CHAMPUS expenditures. In addition, it directed the initiation of two managed care demonstration projects: the CHAMPUS Reform Initiative (CRI) and the Catchment Area Management (CAM). Although both CRI and CAM were lauded as success stories before Congress, the DOD's preferred managed care method was CRI due to its Congressional and beneficiary support. Thus, in 1993 TRICARE, which is an improved version of CRI, emerged as the DOD managed care program (Beumler 1994).

Although TRICARE ensures comprehensive coverage for all beneficiaries, it brings with it a new set of challenges

for military medical personnel. First, economics play a more significant role because the military treatment facility commanders are in direct competition with their civilian counterparts relative to cost. If the theory of managed competition is correct, this should improve the quality and economy of health care delivered in the MHSS (Kronick, Goodman, and Wennberg 1993). Secondly, TRICARE requires a contracting and business savvy that military medical personnel had not previously needed. Those military medical personnel involved with the first phases of TRICARE implementation were poorly prepared to deal with regional multistate bids from seasoned civilian contractors. Currently, with 4 out of 7 bids accepted and/or implemented, the DOD is implementing the program while traversing the learning curve. TRICARE provides the MHSS a choice between the opportunity to become either a customer-focused, cost-effective health care system that delivers high quality medicine or obsolete (Charlip and Baird 1995).

To implement a managed care program of this size within the military, hospital commanders must follow a set of well documented steps which include: the identification of what work is currently being accomplished, how many beneficiaries should be empaneled to the military primary care network, identification of the number of physicians and support staff required, and finally, identification of work

that needs to be offered up for contract (Bonner 1993).

PROBLEM

The work associated with these steps is enormous. The most significant question is how many beneficiaries should be empaneled to the military primary care panel. The answer to this question will be unique for each military treatment facility and is based on many facility unique factors. No two facilities, regardless of the similarity in staffing, bed capacity, or structure will have the same number or answer. The differences occur because each facility serves a unique and different population with specific needs and requirements (Baird 1995). Under the TRICARE system, military treatment facility (MTF) commanders must determine the number of beneficiaries they expect to empanel to their own primary care network. This must be based on their specific resource constraints, before the regional requirements can be consolidated for presentation to potential contractors. Errors in those numbers can result in very costly contract modifications (bid price adjustments) which will result in increased military health care expenditures instead of cost savings.

The research problem stems from the lack of a standard mechanism available to military treatment facility commanders to assist them in determining the proper

beneficiary empanelment size for their facilities.

LITERATURE REVIEW

In order to develop a model to assist commanders to more accurately identify the number of beneficiaries they should enroll in their primary care networks, the researcher conducted an extensive literature review. The major areas researched were: the efficiency of managed care primary care networks, utilization rates based on population demographics, physician productivity and staffing patterns, and the effectiveness of non-physician providers in the primary care setting. The following discussion outlines the salient points encountered through this literature review.

To survive the proliferation of managed care, health care organizations have two critical objectives: to increase market share and to control the premium dollar distributed to providers (Kaufman 1995). According to Kaufman, six characteristics contribute to creating and maintaining market power today. These are: (1) control of covered lives, (2) a large primary care network, (3) managed care infrastructure, (4) prestige, (5) physical location, and (6) cost-effective management of chronic diseases.

Over the past 20 years, health maintenance organizations (HMOs) have dominated the field of managed care. Those that remain certainly meet the essential

characteristics health care organizations must meet to maintain market power as delineated by Kaufman. The staff model prepaid group practice is described as the prototype of the efficient HMO (Kronick, Goodman, and Wennberg 1993). According to a study conducted for the American Hospital Association, managed care plans resembling staff or group-model HMOs will be the most effective at controlling health care costs (Jenkins 1994). The MHSS can best be compared to a staff model HMO epitomized by Kaiser Permanente or Group Health Cooperative of Puget Sound. These organizations, like the MHSS, are capable of health planning. That is, they regulate the supply of beds, physicians, and other providers in relation to the size of their beneficiary population (Kronick, Goodman, and Wennberg 1993). Like the MHSS, this type of HMO employs salaried health care providers which reduces the tendency towards supplier induced demand (Kongstvedt 1995).

Estimating the demand for a service is a complex process which must consider factors on both sides of the supply and demand equation. The demand side revolves around the supplier's price-setting and the consumers' willingness to pay the set price, and thus demand services. However, the provider's ability to induce demand must also be considered in the health care arena (Weiner 1993). Any cost-containment strategy must consider and control

physician induced demand. TRICARE affords the military the opportunity to level the supply and demand sides of the equation. This leveling begins when the MTF commander determines how many beneficiaries can be enrolled in TRICARE Prime (the HMO option). Since the military treatment facility (MTF) commander cannot usually obtain additional resources necessary to meet the entire demand, he or she limits the demand for MTF services by limiting enrollment, based on the supply of health care within the MTF. This is the reverse of the traditional economic model. The unmet demand then passes to the TRICARE Managed Care Support Contractor who builds a supply system to meet the demand (Charlip and Baird 1995).

Although TRICARE allows the MTF commander to balance the supply and demand, the MHSS still faces a unique problem: moral hazard without a control mechanism. Moral hazard occurs when insured beneficiaries demand extra services that they would not demand if forced to pay the full price of those services. Health maintenance organizations are able to control moral hazard by using co-payments and deductibles as deterrents. However, because the MHSS is Congressionally mandated to provide health care at no cost to all active duty military personnel and their family members, it often faces increased costs due to moral hazard.

Primary Care

Although the original concept of managed care does not include capitated funding as a required element, more and more health care providers are receiving reimbursement through capitated payment agreements. As a result of this change in reimbursement policy, Kongstvedt describes the managed primary care concept as an enrolled population with a capitated payment and a primary care manager or gatekeeper responsible for ensuring that the appropriate level of care is provided in the most cost-effective manner (Kongstvedt 1995). This calls for empaneling beneficiaries to a provider or provider panel responsible for the individual's primary care and referrals to increased levels of care.

Although managed care systems provide overall cost advantages, they have fared poorly in providing access to primary care (Barr 1995). However, close attention to optimally structuring primary care systems can prevent problems inherent in large, complex organizations (Barr 1995).

Conventional definitions of primary care encompass internal medicine, family practice, and pediatrics (Kongstvedt 1995). In the MHSS, however, the emergency room plays a major role in primary care because those patients unable to access the system through normal appointments,

choose the emergency room as an alternate source of care. Many health care organizations also include obstetrics/gynecology clinics in their primary care networks.

By the nature of their design, HMOs provide the greatest volume of routine care through their primary care providers who function as gatekeepers. Primary care services are the focal point of a individual's health care whether the care is provided in a HMO or military setting. Results from a study conducted in 1989 suggest that persons in a gatekeeper program use 5 percent more primary care services than non-participants; however, their use of the more costly specialist services decreases by 32 percent (Martin et al. 1989). Based on this and other studies, Weiner estimates that, if gatekeeper programs increased from the current 20 percent to 50 percent of all insurance programs, the national demand for primary care providers would increase from 1 to 3 percent while the demand for specialists would decrease by 10 to 20 percent (Weiner 1993).

Demographics

It is widely acknowledged that different sectors of the population consume different amounts of health care resources. Generally, young people require fewer services

than those individuals 65 years or older (Schappert 1992, Group Health Association of America 1994) while women tend to consume more services between ages 15 and 75 than men in that age category (Schappert 1994). Figure 1 reflects the national age and sex adjusted visits per person per year in 1992. The graph depicts the differences in numbers of visits between men and women within the given age groups.

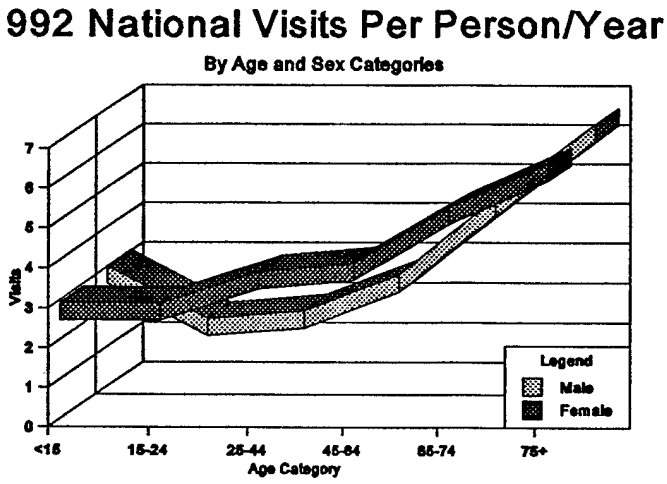

Figure 1. Comparison of male and female visits in 1989 by age category. Source: National Ambulatory Medical Care Survey: 1992 Summary.

Overall, blacks have a lower number of visits per person per year (2.6) when compared to caucasian (3.1). This difference is generally associated with the economic status which tends to be lower in the black population. Economic status drives the access that patients have to care and the severity of the illness or injury at the time that

care is sought out (Wissow et al. 1988). Based on an unpublished study by this author, outpatient care in the MHSS is provided free to all eligible beneficiaries, and as a result the differences caused by economic status/race are not evidenced.

Geographic region also causes a slight difference in visits per person per year. The northeastern and western regions of the United States experience a higher visit rate while the midwestern and southern regions experience a slightly lower visit rate (Schappert 1994).

Because of their for-profit orientation, HMOs tend to enroll a younger and healthier population than the national average (Weiner 1994). The 1992 HMO Industry Survey indicates that nationally HMOs enroll 18 percent more children, 22 percent more women of child bearing years, and 65 percent fewer elderly persons than the national average for the general population. The HMO enrollment composition for 1992 and 1993 is depicted in Table 1 (Group Health Association of America 1993, 1994).

Productivity and Staffing Patterns

In health care systems operating in the fee-for-service arena of health care, physician workload is not a major concern. A physician's productivity is based on how

TABLE 1

COMPARISON OF 1992 and 1993 PERCENTAGES OF

HMO ENROLLMENT COMPOSITION AND NATIONAL POPULATION

Category	1992 HMO	1992 NATION	1993 HMO	1993 NATION
Women	52.9	51.2	53.1	52.4
Women of Child-bearing age	27.2	23.4	26.8	23.1
All 65+	6.4	12.6	5.6	12.6

Source: 1993 and 1994 HMO Industry Surveys

much income he or she desires. Managed care however, changes the economics of health care and forces providers to take responsibility for defined patient populations. Instead of fee-for-service charges, physicians are receiving salaries with performance incentives (Lowes 1995). To financially adapt to this change in reimbursement method, risk-bearing organizations are using more primary care providers and fewer specialists (Lohkamp and Simmons 1995). As a result of these changes, particularly for primary care physicians, many in the industry are trying to determine a reasonable number of patients per physician.

Patient panels (groups of patients continuously seen by, and assigned to, one physician for their primary care needs) are being more widely used and provide physicians

with increased control over their workload and patient care. A 1993 survey reported the average panel size at 1,950 patients per family physician (Lowes 1995).

Because not all patients require the same amount of physician time and effort, and it is well documented that the elderly and women of childbearing age consume more resources, group practices generally adjust panel sizes based on age and sex (Lowes 1995). The 1993 HMO Industry Survey reports that women between the ages of 45 and 64 were seen 6.4 times in 1992 compared with 5.3 times for men in the same age bracket. However, in the age brackets below 15 years and above 65 years, men averaged more outpatient visits than women (Group Health Association of America 1993). To compensate for these differences, Group Health Cooperative assigns weights to each of 14 categories based on age and sex (Table 2).

Weighted panels tend to be larger than the actual number of panel members. For example, the average adjusted lives panel at Sharp Rees-Stealy Medical Group is 1,714, which is actually only 1,364 members (Lowes 1995).

In addition to women patients generally having more physician visits than men, female physicians tend to attract more female patients. Female patients tend to demand and fewer visits per day (Lowes 1995). This results in the appearance that female physicians have lower productivity

TABLE 2

AGE AND SEX ADJUSTED FACTORS
USED BY GROUP HEALTH COOPERATIVE OF PUGET SOUND

Age Category	Female Risk Factor	Male Risk Factor
<01	1.40	1.75
01-02	0.67	0.75
03-19	0.49	0.48
20-29	1.02	0.43
30-39	1.06	0.54
40-44	0.96	0.63
45-49	1.04	0.71
50-54	1.17	0.97
55-59	1.26	1.26
60-64	1.51	1.70
65-69	1.82	2.19
70-74	2.11	2.68
75-79	2.48	3.05
80+	2.54	2.99

Source: Group Health Cooperative of Puget Sound

receive more time from the provider which in turn results in

levels than their male counterparts (Hurdle and Pope 1989).

Other factors also affect physician productivity. The amount of time a physician devotes to administrative duties, conducting hospital rounds, obstetrics, Medicaid patients, research, and teaching will also affect the size of his or her panel. Group Health Cooperative reduces family physician member panels by five for each baby the physician delivers in a year. They also weight each Medicaid patient at two because they consume about twice the resources of the average patient. Additionally, primary care physicians involved in resident teaching one day per month can expect a reduction of 80 members to their panel (Lowes 1995).

In the MHSS, ensuring provider and unit readiness also detracts from provider productivity. In addition to training mandated by military regulations for all servicemembers (Table 3), certain medical personnel have higher readiness requirements based on the speed with which they are expected to deploy. These individuals have additional training requirements which take them away from their patient care mission. Each military department within the MHSS has different specified training standards for those personnel.

The number of patient visits per physician is a method of measuring physician productivity. The National Ambulatory Medical Care Survey published in 1994, reported

TABLE 3

MANDATORY TRAINING

Training Title	Frequency	Length in Hours
Alcohol and Drug Abuse	Annually	1
Basic Life Support	Annually	8
Equal Opportunity	Annually	1
Subversion and Espionage Directed Against U.S. Army	Annually	1
Heat and Cold Injury	Annually	1
Safety	Semiannually	1
Mass Casualty	Semiannually	6
Physical Fitness Test	Semiannually	3
Professional Development	Monthly	1
Total		46 Hours/Year 5.75 Workdays

Source: U.S. Army Medical Command Regulation 350-4.

the overall annual physician office visit rate was 3.0 office visits per person per year in 1992, and had not significantly changed between 1985 and 1992. Also reported was the mean duration of a physician-patient encounter, which at 17.6 minutes resulted in an average of 24 patient visits per physician per day (Schappert 1994).

According to a 1994 survey published by the American Medical Association, family practitioners in 1993 saw an

average of 3.0 patients per hour while internists saw 2.3 patients per hour. Currently, primary care physicians at large group practices, exemplified by the Fallon Clinic, see between 21 and 27 patients per workday. Primary care physicians at Sharp Rees-Stealy Medical Group see between 22 and 24 patients per day and at Southwest Medical Associates family practitioners see up to 29 patients per day while internists see about 25. Those physicians seeing less than 20 patients per day are scrutinized by the group executive staff (Lowes 1995).

In closed panel HMOs, staffing ratios compare the number of primary care providers to the number of beneficiaries enrolled. As reported in 1995, staff model HMOs average 1.10 full time non-administrative primary care physicians per 1000 enrolled beneficiaries (Dial et al. 1995). This represented an increase from 0.98 reported two years earlier by the Group Health Association of America (Group Health Association of America 1993).

The literature reveals several studies on physician staffing ratios. The oldest, conducted in 1980, is the Graduate Medical Education and National Advisory Committee projections for 1990. This study used the Delphi technique, and concluded that 191 physicians (primary care and specialty) would be required to deliver health care to a population of 100,000. The committee further predicted that

36 percent of these providers would be in primary care and the other 64 percent would be specialists (Lohkamp and Simmons 1995). In 1989, another study using data derived from seven large closed-panel HMOs, determined that only 111 physicians were required for the same population size (Mulhausen et al. 1989). In 1993, a study using 5 large staff-model HMOs determined it would take 118 physicians to deliver care to a population of 100,000 (Kronick et al. 1993). In 1994, Weiner used five managed care plans to estimate physician resource requirements. He predicted 124 physicians would be required to serve a population of 100,000. Finally, a 1995 study estimated the required number of physicians for a 100,000 person population to be in a range between 104 and 146 (Lohkamp and Simmons 1995).

Other factors, such as geographic location, also influence the number of physician visits per person per year. The average number of physician visits per person per year for the four basic regions in the United States are depicted in Table 4.

Health maintenance organizations also use member levels as thresholds for staffing level variability. Plans with fewer than 80,000 members have a far greater physician staffing ratio variability than those with higher membership levels (Dial et al. 1995). A classic staff model HMO with 60,000 enrollees could support 71 full time equivalent

TABLE 4

NUMBER OF VISITS PER PERSON PER YEAR

BY GEOGRAPHIC REGION OF THE UNITED STATES IN 1994

Geographic Region	Visits Per Person/Year
Northeast	3.30
Midwest	2.90
South	2.80
West	3.20

Source: National Ambulatory Medical Care Survey: 1992 Summary

physicians and a 3-physician service in most specialties required for general hospital services, but would need to share cardiology and urology services and engage in substantial sharing of inpatient facilities with other plans (Kronick, Goodman, Wennberg 1994).

In addition, health maintenance organizations also predict other resource requirements based on the number and type of enrollees. For example, they estimate fewer than 2 hospital beds per 1000 enrollees based on the following assumptions: (1) the population under 65 years of age uses 350 hospital days per year per 1000 enrollees, (2) the population age 65 and older uses 2430 days per 1000

enrollees, (3) 13 percent of enrollees are 65 or older, and (4) hospital occupancy is at 85 percent (Kronick, Goodman, Wennberg 1994).

Non-Physician Providers

In their constant search to reduce costs, closed panel HMOs have taken advantage of the cost-effectiveness, competence, and patient acceptance of non-physician or mid-level providers (Frampton and Wall 1994, Hummel and Pirzada 1994). Non-physician providers (NPPs) include social workers, psychologists, nurse midwives, physical and occupational therapists, pharmacists, physician assistants (PAs), and nurse practitioners (NPs). This discussion will focus on PAs and NPs.

Organizations employing PAs and NPs experience low turnover rates, high productivity, and well-documented achievements (Hooker 1994). Eighty-six percent of closed panel HMOs use non-physician providers compared with 48 percent of open panel HMOs. Fifty-two percent of all HMOs use PAs and NPs (Kongstvedt 1995). As payers increase their use of capitated plans, non-physician providers are even becoming an attractive alternative for solo and group practice physicians (Kelley 1994). Collaborative practice between physicians and NPPs allows physicians to concentrate on patients with more complex medical problems while still

maintaining a high patient to physician practice ratio (Coslow 1992).

Constantly faced with shortages in physician personnel and recognizing the value of physician assistants (PAs) as part of the medical team, the U.S. Army Medical Department incorporated PAs into the peacetime medical system in the 1970s. A 1985 study found no statistically significant differences in the number of patients handled by a military PA and the physician supervisor, when both functioned in the same outpatient setting. In addition, the study found that one PA can increase physician productivity by as much as 80 percent without diminishing the quality of care (Cyr 1985). Nurse practitioners are also a part of the military medical system and function in fields such as pediatrics, family practice, obstetrics/gynecology, and adult medicine.

A 1993 industry profile found that the mean number of full-time equivalent PAs employed by staff model HMOs was 0.161 while the mean for nurse practitioners was 0.101 per 1000 enrollees (Group Health Association of America 1993). Projections indicate that by the year 2000, HMO workforce requirements will reach 0.2 NPPs per 1000 enrollees (Weiner 1994).

After employing mid-level providers for 10 years, Kaiser Permanente recognized that, in the primary care setting, the tasks performed by non-physician providers

differed little from their physician counterparts (Hooker 1993). In the primary care setting, these mid-level providers are scheduled office visits every 15 minutes, with a maximum number of 25 possible visits per day (Hooker 1993). Twenty-five percent of Community Health Plan's providers are mid-level clinicians and they work in a variety of settings including women's health, pediatrics, family practice, and internal medicine. In addition to PAs and NPs, Harvard Community Health Plan, like the MHSS, employs clinical nurse specialists and nurse midwives (McHale 1994). Staffing ratios for PAs and NPs may be considered 0.8 of a physician full time equivalent for enrollment purposes (Kongstvedt 1995).

PURPOSE

The goal of this document is to provide military treatment facility commanders a flexible model, in the form of a formula, that allows them to determine the number of beneficiaries they should assign to their primary care networks, based on specific MTF staffing and other constraints. The feasibility of this model will be demonstrated by its use in evaluating enrollment for William Beaumont Army Medical Center.

There are objectives that must be met to accomplish this goal. First, data must be collected to at William

Beaumont Army Medical Center. Data elements include staffing, productivity, time available, population demographics, and demand for appointments.

Second, the model, in mathematical form, should be built into a spreadsheet so that data can be easily manipulated and adjusted by each MTF for dynamic planning. Third, the individual component parts of the model (number of staff, productivity by clinic, time lost to activities other than patient visits, and total available workdays, utilization rate, population, and moral hazard) must be built into the spreadsheet so that changes in one area will have a cascading effect throughout the model and be reflected in an updated result. These objectives and specifics about their measures and calculations are discussed in greater detail in Chapter 2.

CHAPTER 2
METHODOLOGY

OVERVIEW

To determine the number of beneficiaries that should be empaneled in a MTF's primary care clinic(s), the researcher must determine and divide the total number of primary care clinic visits the MTF is capable of providing by the total number of visits demanded by the supported population (see box).

$$\text{Number of Beneficiaries To Be Empaneled} = \frac{(\text{Visits Available})(\text{Population Size})}{\text{Visits Demanded}}$$

or

$$\text{Number of Beneficiaries To Be Empaneled} = (\%\ \text{of Demand Accomodated})(\text{Population Size})$$

The numerator in the equation (total number of primary care visits available) is dependent on the number of providers working in the primary care clinic(s), the productivity of each type of provider, and the total number of days each physician is available to see patients. The denominator of the equation (total visits demanded per thousand beneficiaries) is the utilization rate, where utilization rate is defined as the number of primary care

visits generated per year per thousand members of the supported population.

In order to measure physician productivity, the physician output must be defined and quantified. Although using visits as a measure of output ignores the variation in intensity of services, visit data has been used extensively as a measure of productivity (Hurdle and Pope 1989, Regan and Harbert 1991). For this research project, provider productivity is defined as the number of visits accomplished by a provider during an 8-hour period dedicated to seeing patients only. This 8-hour period will be referred to as a treatment day.

Individual provider productivity in visits varies as a function of many factors. Among them are: the type of provider; the specific primary care physician specialty, such as family practice, pediatrics, internal medicine, and sometimes obstetrics/gynecology; and the sex of the provider.

A provider may be a physician, physician assistant, or nurse practitioner (registered nurses are not included in this definition because they do not have prescription writing privileges). Each of these three provider types has a different level of productivity in the primary care environment and, as a result, must be considered separately when calculating productivity.

Each specialty within primary care also varies in the average number of visits provided. For example, the average number of patient visits per week provided by a family practitioner in 1993 was 109.5 compared to 62 by an internist (American Medical Association 1993). These differences will also force separate evaluations by type of clinic and physician specialty.

In addition, female providers in the civilian community tend to provide longer visits. This results in fewer visits and decreased productivity. To determine whether this trend also exists in the MHSS, female providers must have their productivity levels calculated and grouped separately by clinic.

The number of available patient visits is also determined by the amount of time a provider spends seeing patients during a treatment day. When providers are involved in administrative duties, teaching, attending continued medical education seminars, or research the number of patient visits they can provide is reduced. Providers may spend as much as 15 percent of their time on administrative tasks resulting in reduced numbers of patient encounters (Kutch 1995).

Finally, the total number of days a provider is available to see patients will also affect the number of patient visits he or she is able to accomplish. Unexpected

absences such as illness or emergencies, as well as normal scheduled vacation time must be factored into the basic equation. Providers in the MHSS are faced with additional time consuming factors: mandatory training and readiness. The military requires military personnel to undergo a series of annual and semiannual training events. These range from classroom education to physical readiness tests. Military medical readiness requires additional time for specialized individual and unit training. Both of these missions take the provider out of the patient care setting and away from seeing patients (Hughes 1995).

Because the productivity and time factors must be applied to each provider type within each primary care clinic by specialty and sex, the final calculation of the number of visits available from the MTF is the sum of the available visits produced in each clinic. The formula for total available visits is:

$$\sum_{\text{i-provider type}} (q_i * p_i * (1-m_i) * t)$$

where $_i$ is the provider type, q is the number of available providers of that type, p is the average productivity of the provider type, m is the time lost to administrative or other requirements (as a percentage), and t is the total available workdays per year for those providers.

Based on their productivity, there may be up to 6 provider types which must be divided into male and female categories. The provider types are: physician-clinic chief, physician-staff, physician-resident, physician-intern, physician assistant, and nurse practitioner.

Total demand for visits by the population is affected by the age, sex, race, and geographic location of the user population. This project determined the utilization based on age and sex only. The formula used for the denominator was:

$$\sum_{i=\text{age/sex category}} u_i n_i \, (1+mh)$$

where $_i$ is the age/sex category, u is the utilization rate, n is the size of the population empaneled, and mh is the moral hazard (induced increase of the demand in the MHSS over the demand observed in an average HMO) expressed as a percentage. (As stated in the literature review, moral hazard occurs when benficiaries demand services that they would not demand if forced to pay the full price of those services).

The model was built in a spreadsheet using William Beaumont Army Medical Center data and the literature review to demonstrate utility in the MHSS.

PROCEDURE

Before this model can be applied to a military treatment facility, the researcher must have an understanding of the TRICARE process and the proposed MTF primary care structure under TRICARE. The Lead Agent for TRICARE in Region VII provided the researcher an in depth briefing of the William Beaumont Army Medical Center region under the TRICARE program. In addition, the Chief of the Primary Care Task Force at William Beaumont Army Medical Center provided a detailed briefing on the proposed primary care structure to support the TRICARE initiative.

There are three steps in this process for any MTF using this model. The first step is the search for reliable, existing data matching the input requirements. The next step is to apply that data to the individual parts of the equation, and the final step is to calculate the results. This project included the five primary care clinics that will form the primary care network under TRICARE as identified by the Chief, Primary Care Task Force. These were: (1) the women's health clinic, (2) the primary care internal medicine clinic, (3) the pediatric clinic, (4) the emergency room/acute care clinic, and (5) the consolidated troop medical clinic. In addition, the researcher surveyed the chiefs of the five primary care departments separately. This was because these individuals

have additional administrative responsibilities which preclude them from contributing equally to department productivity.

Calculation of the Available Visits

The numbers and types of providers that will staff the primary care areas were determined through discussions with the Department Chiefs based on the Table of Distribution and Allowances (unit staffing document). The researcher calculated the number of available providers by taking the average percent fill of the authorizations over the last fiscal year. This step resulted in the determination of the quantities (the q in the formula), types, and locations of staff for each primary care area. Although the researcher initially intended to determine the productivity by sex, the data was inconclusive and this was not done.

Productivity Calculation

The next step was to identify the average productivity level for each type of provider within each clinic. This was accomplished by surveying the current visits accomplished by providers in each primary care clinic within the network. To do this, all providers in each area except CHAMPUS partnership providers, were randomly selected based on draws from a hat, and placed on a list in the order of selection. Seven days were chosen in a stratified random

manner, choosing one of each day of the week from a random draw of weeks within the 7-week data collection period. On each of the selected days, one provider from each provider type was selected, in order from the list, and asked to fill out the questionnaire at Appendix D. If the selected provider was absent, the researcher continued down the list until the next available provider of the same type was selected. At the end of the day, the number of visits identified by each provider were compared with the number of patients logged in the clinic appointment schedules, and any discrepancies were resolved. Discrepancies resulted from walk-in patients not identified in the appointment log and from no shows being incorrectly counted. This study did not include no shows in the total number of patient visits per day. If any hours of the day were unavailable to patient care visits due to other requirements, the provider's visit count was calculated to the proportional number for a full treatment day using the following formula.

$$\text{Visits Per Treatment Day} = \text{Observed Visits} \times \frac{\text{Length of a Normal Treatment Day}}{(\text{Length of Normal Trmt Day} - \text{Hours Unavailable})}$$

The daily productivity of each provider type was then calculated by straight line averaging all calculated or observed visits per treatment day by provider type and sex

(Appendix E). The provider information was collected on a modified clinician utilization report used for the Uniformed Chart of Accounts for Personnel Utilization[2] (UCAPERS). This provided the p for the equation.

Time Lost Calculation

For those providers involved in administrative, teaching, or research functions, the researcher determined the average amount of time lost per treatment day (m) based on those functions.

Time lost was determined through the survey instrument. The time lost to each of the three functions listed above was annotated in minutes, straight-line averaged by provider type, and converted to a percentage of the treatment day. The total percentages of lost time by function and provider type were then added together and subtracted from 1. (One represented a full treatment day). This number was then multiplied by the daily provider type productivity to determine actual daily productivity including time lost.

Administrative functions include activities such as: attending staff meetings, dealing with resource or staffing issues, and conducting command-directed projects. Although

[2]The Uniformed Chart of Accounts for Personnel Utilization is part of the Medical Expense and Performance Reporting System. It captures manhours and calculates salary costs.

expert opinion initially recommended 15 percent as the amount of time lost to administrative duties (Bowland 1995), the researcher calculated this time separately for each provider type. The time reported as lost to administrative functions was straight line averaged by provider type, converted to a percentage of a treatment day by multiplying the average minutes by 100, dividing that by 480, and then dividing by 100. The resulting number was one of the three components of the m in the formula (Appendix E).

Time lost to teaching functions was calculated by straight line averaging the reported time dedicated, on a daily basis, to teaching and reviewing work produced by student providers. This number of minutes was converted to a percentage of a treatment day for each provider type using the same method described for administrative lost time. This percentage, as the second component of the total m (time lost), was applied to those providers in the clinic involved in teaching functions in order to reduce their productivity level by the lost patient care time (Appendix E).

Although expert opinion recommended that providers involved in research should have their available time reduced by 10 percent, (Weisman and Hawley-Bowland) the researcher calculated this time by provider type using the same method as described for teaching and administrative

duties. The total percentage of time lost due to any one or all of the above functions (administrative, teaching, and research) was totalled for each provider type, providing the m_i of the formula (Appendix E).

Total Available Days Calculation

The final element of the numerator calculation was total days available. Although the researcher was able to determine a baseline number of available days, this calculation was done individually for each provider type and in some instances subtype. This was because there was great variability in the days worked by provider type, the days worked in a particular clinic, and the days of leave authorized.

The baseline number was determined by subtracting the number of weekend days from 365 and then subtracting an additional 41.75 days broken down as depicted in Table 5. This provided the researcher with 219.25 days as a baseline number from which days were added or subtracted depending on the particular situation. For civilian employees in all clinics, the researcher used the average number of authorized vacation days for civilians to calculate days available.

Although Kutch uses an average of 5 days per year to reflect the time providers are away from patient care

TABLE 5

Days Lost Per Year By Category

Categories of Lost Days	Number of Days Lost
Leave	20.00
Sick	5
Federal Holidays	11
Mandatory Training	5.75
Total	**41.75**
PROFIS (Military Specific Training)	20

Source: Plans, Training, Mobilization, and Security; William Beaumont Army Medical Center.

delivery due to continuing medical education (Kutch 1995), the researcher found that each provider type had a differentnumber of non-patient care days as a result of continuing education or conference attendance. Therefore, since the researcher collected this data on each survey, the average number of days on temporary duty (TDY) for each provider type was subtracted from the baseline number to calculate actual time available per year (Appendix E).

For each provider identified as being part of the professional officer filler system (PROFIS), an additional 20 days was subtracted from the baseline. These providers

have a heightened readiness mission and require additional training days. This study did not include deployments.

In general, for residents and interns who rotate through the clinics and services within the medical center, the exact number of days available to the particular clinic was used to determine their productivity.

In the women's health clinic; however, residents and obstetric/gynecology interns spend only a portion of each day working in primary care areas. To calculate the time available for these providers, the researcher determined the number of primary care days that would be worked by these providers in a week. This was done by using the master schedule used by the clinic staff to assign clinics during rotations. The total number of required days per week was divided by the total number of resident or intern days in a week. For example; the residents must staff 16.5 days of primary care clinics each week. Among the 13 residents there were 65 days available. When 16.5 days is divided by 65 days the result is 25.38 percent. This is the percentage of time in a week that the residents dedicated to primary care. This percentage (25.38) was then multiplied by the total days the provider type was available in a year (215.25) to determine the exact number of days (54.64) dedicated to primary care.

The calculation for the pediatric residents and

interns was much easier because whenever they are assigned to the pediatric clinic they see only primary care patients. Therefore, the percentage of time dedicated to primary care was determined by multiplying the percentage of the rotations spent in the particular primary care clinic a year by their total available days in a year. For example; navy interns spend 5 of 13 total rotations in primary care areas. Therefore, their total yearly available days (213.25) were multiplied by 38.46 percent. This resulted in each navy intern being available for primary care for 82.01 days per year.

Multiplication of the four elements: (1) number of providers, (2) productivity per day, (3) time lost, and (4) available days resulted in the total number of visits that could be produced by a provider type.

By adding the number of visits able to be produced by each provider type within a clinic to those of the clinic chief, the researcher was able to forecast the total number of visits that the clinic could produce in a year. The researcher applied the productivity, time lost, and days available from the department chiefs' calculation in each clinic so that all chiefs, except the cardiology chief, reflected the same numbers.

The sum of the visits produced by all five clinics in the primary care network provided the available visits for the basic formula.

Calculation of the Visits Demanded

The following five step predictive mechanism was used to determine the total demand for visits. First, the researcher collected data pertaining to Fiscal Year 1995, which was used as a base year, to determine past demand. Second, the researcher used national HMO data to predict the "normal" demand for the base year population served by William Beaumont Army Medical Center. The third step was to compare the results of the first and second steps to estimate the increase demand on the MTF resulting from moral hazard. The fourth step used the national HMO data to predict the "normal" future demand by the projected 1996 population, and lastly the researcher added the moral hazard to more accurately estimate the actual demand on the MTF for Fiscal Year 1996.

Step 1

Because MEPRS could not provide age specific data, the researcher conducted a 1-day convenience sample of the three clinics (women's health, primary care internal medicine, and emergency room/acute care clinic) providing care to patients over the age of 65. The number of visits associated with patients 65 and older, divided by the total number of visits per clinic resulted in the percentage of patients over 65 seen in that clinic on an average day. Application of this

percentage to the total clinic outpatient visits reported for Fiscal Year 1995 by each clinic resulted in the number of outpatient visits provided to those patients over 65 years of age. Although the percentage was calculated for the emergency room/acute care clinic, it was not applied to the total visits because patients seeking care at this clinic must be seen and stabilized by law. Therefore, these patients would likely be seen in spite of the TRICARE empanelment rules.

In addition, the MEPRS data includes specialty and primary care clinic visits in the total numbers. This presented a particular problem in the Pediatrics Clinic where specialty care visits had been included in the total outpatient visit numbers. The specific Fiscal Year 1995 visit numbers could not be retrieved, so the researcher determined the number of specialty care visits conducted in the November 1995 to January 1996 period. Based on the average percentage of specialty care visits performed in this 3-month sample, the researcher reduced the total reported visits by 6.12 percent.

The CHAMPUS data was obtained from the Triservice CHAMPUS Statistical Database also known as the Medical Analysis Support System. To ensure that only primary care visits were selected, the researcher used the CPT-4 codes for office/outpatient visit reflected in Table 6.

TABLE 6

CHAMPUS Outpatient Visits

Fiscal Year 1995

CPT CODE	Number of Visits	CPT Code	Number of Visits
90015	2734	99211	1541
99201	556	99212	8689
99202	11307	99213	82128
99203	3016	99214	21471
99204	1134	99215	3719
99205	662	**TOTAL**	**136957**

Source: Medical Analysis Support System

Thus, the sum of the 177,296 estimated outpatient visits based on MEPRS and the 136,957 CHAMPUS actual visits equaled the total demand of 314,253 visits on William Beaumont Army Medical Center in Fiscal Year 1995.

Step 2

The age-sex adjusted utilization rates found in the Health Plan Employer Data and Information Set[3] (HEDIS) version 2.0 were applied to the William Beaumont Army Medical Center catchment area population for Fiscal

[3]The Health Plan Employer Data and Information Set is a report intended to give employers objective information with which to evaluate health plans and hold them accountable. The report is based on information provided by HMOs to the National Committee for Quality Assurance.

Year 1995 stratified by active duty, family member, retiree and retiree family member, surviving dependents, other, age, and sex (Appendix E, Table 15). The same was done to the projected population numbers for Fiscal Year 1996 (Appendix E, Table 16). The Retrospective Case Mix Analysis System for an Open System Environment[4] (RCMAS:OSE) was used to determine the number of beneficiaries in Fiscal Year 1995 per age and sex category, excluding anyone over age 65.

The resulting numbers reflected the number of visits the WBAMC population would have demanded under an efficient HMO structure in Fiscal Year 1995. This would not include the moral hazard the military medical community experienced as a result of providing free care. This is referred to as the "efficient utilization rate."

Step 3

The "efficient utilization rate" was then compared with the actual utilization rate by comparing the number of calculated efficient visits with the actual visits

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[4]The Retrospective Case Mix Analysis System for an Open System Environment is a clinical and biostatistical management tool designed to serve the analytical needs of clinicians and managers at MTFs, intermediate commands, the Surgeons General, and the Assistant Secretary of Defense for Health Affairs. It compiles data from the Defense Medical Information System which includes: Defense Enrollment Eligibility Reporting System, CHAMPUS, CHAMPUS Database Integrated Program, MEPRS, and Medical Treatment Facility Monthly Inpatient and Outpatient Reports.

experienced (Appendix E, Table 17). The researcher expressed this difference as a percentage which represented the moral hazard and teaching inefficiencies associated with William Beaumont Army Medical Center in Fiscal Year 1995. Teaching facilities tend to suffer from increased utilization and costs resulting from additional tests an procedures ordered for teaching versus patient needs. (Brooke, Hudak, and Finstuen 1994; and Fox and Wasserman 1993). If this comparison was done at a hospital without graduate medical education, the percentage would only reflect moral hazard.

Step 4

The HEDIS age-sex adjusted utilization rates were applied to the projected Fiscal Year 1996 population. This resulted in the number of visits that would be demanded by the MTF population under an efficient HMO structure.

Step 5

By applying the percentage associated with the moral hazard and teaching requirements experienced in Fiscal Year 1995 (determined in step 3) to the efficient utilization rate projected for the 1996 population, the researcher calculated the projected demand for Fiscal Year 1996. The projected population was taken from the Resource Analysis

and Planning System[5] (RAPS) which is a subsystem of Defense Medical Information System. Because TRICARE does not provide a mechanism to empanel patients over 65 years of age, this beneficiary group must continue to access care through Medicare and on a space available basis at the MTF. For this reason, these patients were not included in the projected population number.

Beneficiary Calculation

The next step of the process was the division of the total available visits by total demanded visits. This division resulted in the percentage of total demand that can be accommodated by the MTF primary care network. By applying this percentage to the projected number of beneficiaries for Fiscal Year 1996, the researcher determined the number of beneficiaries to be empaneled in the primary care network.

To show the application of the basic formula to specialty services, the same procedure was followed to determine the number of patients that could be seen in the cardiology service.

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[5]The Resource Analysis and Planning System (RAPS) is a computer analysis tool of the Defense Medical Information System. The RAPS analyzes and forecasts scenarios to provide health care analysts assessments of the impact of operational and policy decisions on health care requirements and costs.

Cardiology Calculations

The same survey and procedures were followed to collect the data and derive the number of projected cardiology primary and specialty outpatient visits to be produced. The researcher calculated both primary and specialty care visits to be produced at the request of the department chief, but only specialty care was of interest to this study. The cardiology chief's calculation was taken from an average of his own productivity, time lost, and days available, and was not averaged with the primary care department chiefs. This was because cardiology is a specialty service.

The number of actual specialty care visits conducted by the cardiology clinic in Fiscal Year 1995 were determined manually from the monthly workload tally sheets, and this number was divided by the population (< than 64) served in Fiscal Year 1995. The MEPRS data was not used because it included a variety of procedures that were not specialty outpatient care. This resulted in the visits per person per year. This number was applied to the Fiscal Year 1996 projected population to determine the projected demand. The projected available visits divided by the projected demand resulted in the percentage of specialty cardiology outpatient demand that could be met (Appendix E, Table 18).

Spreadsheet Construction

Because of the mathematical processes involved, a Microsoft Excel spreadsheet program was used. Data elements required are listed in Appendix B. The spreadsheet contained basic demographic data on each provider surveyed in the first three columns. The subsequent columns contained the survey information or mathematical calculations for productivity, time lost, and days spent TDY. A shell example of the spreadsheet layout is shown in Appendix F. Once the raw data was entered into the spreadsheet, an hourly patient rate was calculated for each provider by dividing the total number of patients seen by the total number of hours worked in the primary or specialty care outpatient area.

Using the formula described on page 32, the researcher calculated the number of patients that could be seen at the calculated rate per hour in one 8-hour treatment day. For the primary care cardiology visits, which were not the focus of this study, the researcher used a 4-hour treatment day. This was because the clinic chief directed that the staff would only dedicate one half-day per week to primary care patients. The calculated visits per treatment day were then averaged by provider type and an overall provider type average was determined to provide the clinic chief with an additional management tool.

The reported time lost per day in minutes was also captured on the spreadsheet per function and provider. These were also averaged to determine the provider type average for time lost to administrative, teaching, and research functions.

The average days TDY by provider type was rounded up or down to the nearest whole number and subtracted from the particular provider type available days baseline to determine the actual available days. All data was placed in the spreadsheet.

Validity and Reliability

The validity and reliability for most of the data used in this study are assumed because the data was acquired through established systems already in use within the MHSS; for example, MEPRS, RAPS, and RCMAS:OSE. The researcher also made the fundamental assumption that the current case mix per provider is equitable and will not change as a result of the implementation of TRICARE. Thus, the data collected for the study should not change as a result of TRICARE.

The data collected through the modified clinician utilization report was reliable since only the researcher interacted with the participants, and the instructions to each participant were exactly the same. The data was valid

because it related directly to patient visits, came directly from the individual providers, and was verified with their clinic appointment schedules.

The calculations to estimate the number of over 65 retiree visits produced in the primary care and women's health clinics assumed that the proportion of over 65 retirees seen on that day was equal throughout the year. As a result, this assumption may have over or under estimated those numbers. In addition, the application of 6.12 percent to the pediatric outpatient visits to account for specialty care may likewise be high or low. The 3-month period sampled may not have included seasonal illnesses which might also impact the number of specialty care visits provided.

Because of the extensive CPT-4 codes that might be used in primary care CHAMPUS data and the difficulty in identifying all possibilities, the researcher only included CPT-4 codes that addressed outpatient/office visits, newborn/well-baby visits, immunizations, and specific emergency department visits that qualify as primary care. This reduced the total number of captured primary care visits extracted from the Medical Analysis Support System, Triservice CHAMPUS Statistical Database and, as such, made the overall demand appear smaller. The CHAMPUS database may also include some follow-up outpatient care visits which should be classified as specialty care visits. In addition,

because of the difficulty in determining the exact number of cardiology visits that could be attributed to specialty level care, the CHAMPUS workload was totally ignored in the cardiology calculations.

The major area not included was preventive medicine services. This service was not included because the researcher felt the numbers of visits would not add significantly to the overall total, and patients would be referred to the service instead of the service acting as a gatekeeper with empaneled patients.

CHAPTER 3
RESULTS

The major contribution of this study is a tested, generic model that can be applied to any MTF within the MHSS to determine the number of beneficiaries that can be empaneled into that MTF's primary care network. The importance of this model is that it is based on the facility's own staffing and productivity levels. The model allows MTF commanders to base empanelment numbers on their specific ability to meet the demand in their catchment area without extrapolation from a vastly different civilian health care system. In addition, as changes occur in productivity levels, minor adjustments to the formula elements will result in timely adjustments to the empanelment numbers.

The model also provides MTF commanders with the specific numbers of beneficiaries that will need to be placed into the contractor's network and, as a result, will allow him or her to more accurately estimate costs. This information will also allow the Lead Agent to approach contractor negotiations with a more precise estimate of the need, utilization, and subsequent costs associated with the beneficiaries empaneled in the contractor network.

The intermediate results of this study are presented in Appendix E. The final results spreadsheets (Appendix E, Tables 17-18) are based on: (1) the worksheets for each clinic and for the department chiefs (Appendix E, Tables 7-13), (2) the calculations of the HMO "efficient utilization" for Fiscal Years 1995 and 1996 (Appendix E, Tables 15-16), and (3) the actual and projected demand for Fiscal Years 1995 and 1996 (Appendix E, Table 17). A comparison of male and female provider productivity is at Appendix E, Table 14. The data contained in these spreadsheets may be improved as more extensive or better data is collected and reported.

Table 17 depicts that the total actual demand in Fiscal Year 1995 was 314,253 outpatient care visits. When compared to the 176,990 outpatient visits an HMO would produce to care for the same population, William Beaumont Army Medical Center produces 77.55 percent more visits.

When the 77.55 percent is applied to the projected "HMO efficient utilization" for Fiscal Year 1996 the projected demand is estimated at 287,868. Based on the productivity worksheets (Appendix E, Tables 7-13) the projected available visits is 183,078. Comparison of these number shows that only 63.60 percent of the demand can be met by the medical center.

When the 63.60 percent is applied to the projected

population of 51,304, the result is 32,628. This is the number of beneficiaries that should be empaneled into the medical center's primary care network if productivity and utilization rates remain constant.

CHAPTER 4
DISCUSSION

The following discussion will address the some of the challenges encountered by the researcher and the results of this study.

The survey and subsequent distilling of the collected data to determine the productivity figures was the most challenging portion of this study. Explaining the survey to providers and then gathering the completed surveys was a time intensive endeavor.

Understanding what aspects of women's health and pediatrics are considered primary care, and consequently what areas are not, became the first challenge. Subsequently, providing this information to providers who were unclear about the definition of primary care and what it entails, became the second. Some providers, usually interns or residents, believed that because they were in a specialty area, all the care they provided was considered specialty care. An education process quickly accompanied the survey process.

The next problem area was identifying the time dedicated to teaching. During this time of resource constraints and military downsizing, this data is essential

for the survival of teaching programs in the MHSS. This study estimated the cost in time and productivity of graduate medical education in three clinics (primary care internal medicine, pediatrics, and emergency room/acute care clinic).

Although there is an obstetrics and gynecology residency program at William Beaumont Army Medical Center, the staff physicians involved in the program do not see primary care patients, and thus the productivity as related to primary care is not altered by the program. These physicians were not included in the women's health survey. The one physician who does provide primary care in this clinic is not involved in the teaching program and, as such, his productivity is not affected by the teaching program.

The average time dedicated by staff physicians to graduate medical education in the other clinics was 27.82 percent. This seems to confirm a study conducted in 1991 at the University of Illinois which estimated that the productivity of teaching physicians was decreased by 30-40 percent (Garg et al. 1991).

In all clinics except pediatrics, resident productivity significantly surpassed that of staff providers. This falls in line with studies of resident efficiency in other teaching facilities where residents are used efficiently and are responsible for a large part of the

facility's workload (Campbell, Gillespie, and Romeis 1991; and Knickman et al. 1992).

Although expert opinion described administrative responsibilities for providers to be about 15 percent, this study showed the average for department chiefs was 66.29 percent. Clinical department chiefs at William Beaumont Army Medical Center are usually physicians; thus applying this percent across the 10 major departments results in an average loss of 6.63 days per provider. At a productivity rate of 11.51 visits per day, this results in a loss of 76.31 visits per day. The time lost to administrative functions was calculated for each provider type and applied respectively.

This study showed that research takes less that 1.8 percent of providers' time, and that percentage was only applied to selected provider types in the three residency training program clinics (women's health, primary care internal medicine, and pediatrics).

Another area which required in depth understanding of graduate medical education, and how interns and residents rotate throughout a medical facility, was the calculation of available days. For staff providers the calculation was straight forward based on the days the clinic was open and vacation times authorized plus the days unavailable due to training. Residents and interns, however, spend a specific

number of days and hours in each clinic. This number varies by intern, resident, military department affiliation, and clinic. In women's health it is compounded because residents spend a portion of their time in the clinic dedicated to primary care and another portion to specialty care. These calculations took up the majority of the time in the study.

An interesting, but unfortunately inconclusive area of this study was the productivity level of male providers compared to female providers. Other researchers have reported that female providers spend more time with each patient, therefore having a lower productivity level than their male counterparts (Hurdle and Pope 1989). Data in this study is inconclusive because there were clinics that either had no female providers, or these were not selected in the random draw. Appendix E, Table 14 depicts the results attained.

One area highlighted by this study is the affect of the military's requirement for readiness on the provider productivity levels. In addition to the days away from direct patient care due to PROFIS or other training, the military requires periodic physicals for all personnel. In order to meet the demand for these physicals, providers at the consolidated troop medical clinic must spend every afternoon conducting physicals. Although not procedure

intensive, these physicals are time intensive and reduce the number of patient visits produced compared to civilian health care sector. This does not appear to affect the clinic staff's ability to provide access, but does reduce overall visits produced. In a 1994 article comparing family practice in the federal and non-federal sectors, the author describes the requirement for periodic physicals as the most striking difference between the two samples (Blount, Hart, and Ehreth 1994).

One major discovery during this study was, that although we collect and report a lot of data, it is not necessarily collected or reported in the most useful manner. In addition, our computer systems are geared toward improving the quality of patient care, but not towards effectively managing patient care delivery. Currently, at William Beaumont Medical Center, MEPRS data cannot be broken down by age, sex, or type (specialty versus primary). Without any computer software to determine specific number of visits by type, the researcher had to either return to historical manual records or apply convenience sample results to estimate total numbers.

Based on the results of this study however, gathering and manipulating the data was worth the cost. The model can be applied to any MTF to determine the proper empanelment number based on productivity.

CHAPTER 5
CONCLUSIONS

Although the model described in this study provides the user with the total number of beneficiaries to be empaneled into an MTF's primary care network, based on a specific catchment area and facility specific constraints, the results cannot be applied indiscriminantly. The Department of Defense and the Military Health Service System (MHSS) are wrestling with the ethical and moral issues surrounding the provision of health care for the over 65 population (Joseph 1996). Until the final decisions are made, the military medical community has been directed to continue providing space available care to military retirees over 65. Therefore, although this population is not eligible for empanelment, it will be provided access to the MHSS.

In the case of William Beaumont Army Medical Center, the model defines the number of beneficiaries to be empaneled as 32,628. This number assumes that every possible patient appointment would be filled by those individuals under 65 years of age. However, even if there were no space available appointments for the over 65 population, a graduate medical education program cannot

survive without those providers in training being able to treat geriatric patients. Therefore, a portion of the over 65 population must be seen by providers in training. As a result, the commander may only use the empanelment number as a guide to the total number of patients to be seen, not the total to be empaneled.

On a higher level, the MHSS is following the lead provided by civilian academic medical centers which are developing primary care capacity and establishing integrated medical systems in an effort to secure their survival (D'Antuono 1995). Many academic medical centers are moving toward comprehensive contracting in an effort to further reduce costs (Fox and Wasserman 1993). In the MHSS, the TRICARE contractor is the comprehensive contract the corporate headquarters is using to build a larger primary care base. Medical centers are serving as regional tertiary medical facilities which receive referrals from smaller community hospitals within a geographic region. William Beaumont Army Medical Center, as the only tertiary medical facility within the geographic region spanning Arizona, Nevada, New Mexico, and West Texas, forms the cornerstone for the Southwest regional integrated delivery system. Use of the model described in this study will enhance decisions related to the primary care base, as well as provide the corporate structure a better negotiating position for regional contracts and decisions.

CHAPTER 6
RECOMMENDATIONS

The actual worksheets used to develop the elements of the formula may also be useful to MTF commanders. Although, the productivity levels calculated for each clinic must be viewed in the context of the whole patient care mission and military detractors, such as deployments, these figures may serve as a starting place for analysis and evaluation of current practice patterns and protocols. Where productivity levels seem low in comparison to benchmarks or other standards, the commander may chose to analyze the processes that go into producing the work. This may lead to methods to improve efficiency and consequently increase productivity which will provide additional visits to recapture some of the contractor workload, or to provide additional space available appointments to the over 65 population.
The resulting number however, may only be used as a guide to help commanders determine the actual numbers to be empaneled in the MTF and the costs associated with those beneficiaries who will be provided care through the contractor.

This model could be applied to all MTFs within the MHSS in order to assess the true moral hazard suffered by this system. That knowledge might allow for improved, more

cost-effective decisions regarding implementation of co-payments or other disincentives for inappropriate use visits by beneficiaries.

Future studies might include the percentage of no shows which also contribute to the inefficiency of the overall system. No shows reduce the utilization of available visits and may actually contribute to a smaller empanelment number than could be accomodated.

A more detailed study of the application of the basic model to specialty care areas might provide an empirical method of determining the number of outpatients to be followed in the specialty clinic. The clinic staffs might have the visit capacity to serve as gatekeepers for a small number of patients who suffer primarily with a specialty level illness.

However, the cost of the decisions to be made must always be balanced with the cost of deriving the information. Projects that save 100 dollars may not be worthwhile if 1000 dollars were expended to acquire the information on which to base the decision.

APPENDIX A
SOURCES OF DATA

1. Staffing levels in Primary Care Areas

A. Projected on hand staffing based on Fiscal Year 1994 percent fills of the authorizations dictated by the Table of Distribution and Allowances, MCWOQ3AA, CCNUM: 0295.

B. Clinic Staffing:

(1) MAJ Doreen Lounsbery, Chief, Primary Care Task Force, William Beaumont Army Medical Center.

(2) Dr. Anita Larson, Chief, Primary Care, William Beaumont Army Medical Center.

2. Provider Productivity

A. Emergency Room/Acute Care Clinic: Standard Form 558.

B. Pediatric Clinic Appointment Schedule.

C. Internal Medicine Clinic Appointment Schedule.

D. Obstetrics/Gynecology Clinic Appointment Schedule.

E. Troop Medical Clinic Appointment Schedule.

3. Lost Time

A. Administrative: Individual provider surveys, Appendix D.

B. Research: Individual provider surveys, Appendix D.

4. Total Days/Year

A. General: Uniform Chart of Accounts for Personnel Utilization.

B. Intern and Resident Master Schedule, Graduate Medical Education Office, William Beaumont Army Medical Center.

C. Residency Program Master Training Schedules

(1) Women's Health Program

(2) Pediatric Program

D. Training and Readiness: SFC Forrest Hughes, Noncommissioned Officer in Charge, Plans, Training, Mobilization, and Security, William Beaumont Army Medical Center.

5. Utilization Rates: The 1990 Enrollment Distribution and Utilization Rates Per 1,000 Members by Age and Sex, Health Plan Employer Data and Information Set (HEDIS) 2.0.

6. Population Data

A. Retrospective Case Mix Analysis System for an Open System Environment.
B. Resource Analysis and Planning System.

7. Visits

A. Medical Treatment Facility Fiscal Year 1995 Outpatient Visits: Medical Expense and Performance Reporting System.
B. Clinic Monthly Workload Tally Sheets
C. CHAMPUS Outpatient Visits for Fiscal Year 1995: Medical Analysis Support System, Triservice CHAMPUS Statistical Database.

APPENDIX B
DATA ELEMENTS

1. Staffing Level: The number of providers (physicians, physician assistants, and nurse practitioners) projected for Fiscal Year 1996 based on on-hand providers in each clinic during Fiscal Year 1995. Includes the cardiology service and women's health; primary care internal medicine; acute care/emergency room; pediatric; and consolidated troop medical clinics.

2. Provider Productivity: The number of patient appointments produced by provider type per day in Fiscal Year 1996. Includes the cardiology service and women's health; primary care internal medicine; acute care/emergency room; pediatric; and consolidated troop medical clinics.

3. Time Lost to Other Activities: Time per provider/per day that is not used to produce patient appointments. This may include: attending meetings, teaching, reviewing student work, and research.

4. Population: Number of beneficiaries stratified by age and sex, active duty, family member, and retiree, retiree family member, surviving dependents, and other served by William Beaumont Army Medical Center during Fiscal Year 1995 and the projected population for Fiscal Year 1996 also stratified.

5. HMO Utilization Rates: The number of primary care visits made by age/sex stratified segments of the average HMO population expressed per thousand in 1990.

5. Outpatient Visits:
    A. Number of Fiscal Year 1995 outpatient visits for William Beaumont Army Medical Center.
    B. Number of Fiscal Year 1995 CHAMPUS Outpatient Visits.
    C. Number of specialty outpatient visits produced by the cardiology clinic staff in Fiscal Year 1995.

APPENDIX C
MAJOR ASSUMPTIONS

1. Workload: Facility will not encounter a major change in case mix with the onset of TRICARE.

2. Provider types: Registered nurses do not qualify as providers because they are not credentialed to write prescriptions. As a result, they cannot perform visits and increase the size of optimum panels.

3. Productivity

A. Productivity levels will remain the same after the implementation of TRICARE at William Beaumont Army Medical Center.

B. Current CHAMPUS partnership primary care contract providers will not be employed by the MTF under TRICARE.

C. All residents, regardless of year, have a comparable productivity rate.

D. All interns, regardless of type, have a comparable productivity rate.

4. Lost time: The assessment of additional training days for PROFIS designated personnel by the Noncommissioned Officer in Charge, PTM&S was accurate.

5. Utilization

A. That the race factor in utilization does not apply to the MHSS population because medical care is available at no cost.

B. The number of over 65 year old patients seen on the date of the convenience sample was reflective of an average day.

C. The number of specialty care visits produced between November 1995 and January 1996 were reflective of those produced in Fiscal Year 1995.

D. The percent of the demand that can be absorbed by the MTF primary care network is dispersed equally across the population served thereby allowing the application of the percentage directly to the population total.

E. In the absence of moral hazard, HEDIS rates are applicable to the MHSS benficiary population.

APPENDIX D
MODIFIED CLINICIAN UTILIZATION REPORT

NAME_____TITLE_____DATE_____

SEX____ CLINIC_____

Please furnish your hours for the day broken down into the following categories.

1. AVAILABLE HOURS

____ Inpatient Care Hours

____ Outpatient Care Hours

a. _____Hours dedicated to primary care

b. _____Number of primary care patient visits

c. _____Hours dedicated to specialty care

d. _____Number of outpatient specialty care visits

e. _____Hours spent on Administrative Duties

(The sum of a and c should equal total outpatient care hours per day)

2. GRADUATE MEDICAL EDUCATION

How many hours did you spend actually teaching or supervising interns and/or residents today?

____ Teaching Hours

On average, how many hours do you spend actually teaching or supervising interns and/or residents in a week?

____ Average Hours Per Week

3. RESEARCH

How many hours did you spend actually doing research today?

_____ Research Hours

On average, how many hours do you spend actually conducting research in a week?

_____ Average Research Hours Per Week

4. NONAVAILABLE HOURS

_____ Physical Training

_____ Mass Casualty Training

_____ Mobilization Readiness

_____ Other (Specify)

5. Please circle one of the following that is applicable to you:

Intern	Staff
Resident	Physician Assistant
Fellow	Nurse Practitioner

Other (Explain)

6. Please circle one of the following that is applicable to you:

Active Duty	Department of the Army Civilian

Other (Specify)

7. How many days a week would you normally work in this clinic?

8. On average, how many days a year are you TDY?

Appendix E
Table 7
Results from the Womens' Health Clinic

WOMENS' HEALTH CLINIC								
	Providers Available	Average Daily Productivity	Percentage of Day Lost To Other Functions			Available Days	Total	Average Days TDY
			Administrative	Teaching	Research			
CHIEF	1	11.51	0.6439	0.2080	0.0019	195.50	328.98	24
STAFF	1	20.00	0.125			167.25	2926.88	0
RESIDENTS	13	25.30	0.1607	0.0893	0.0179	54.64	13162.10	4
OB/GYN INTERNS	4	18.54	0.0803		0.0001	47.53	3240.69	8
TRANSITIONAL INTERNS	14	18.54	0.0803		0.0001	20.00	4772.61	8
NURSE PRACTITIONERS	2	17.42	0.0848		0.0003	219.25	6988.52	10
CLINIC TOTAL							31420	

Appendix E
Table 8
Results from the Primary Care Internal Medicine Clinic

PRIMARY CARE INTERNAL MEDICINE CLINIC								
	Providers	Average Daily	Percentage of Day Lost To Other Functions					Average
	Available	Productivity	Administrative	Teaching	Research	Available Days	Total	Days TDY
CHIEF	1	11.51	0.6439	0.2080	0.0019	195.50	328.98	24
NON-PROFIS STAFF	4	5.60	0.3125	0.2857	0.0179	215.25	1864.19	4
PROFIS STAFF	2	5.60	0.3125	0.2857	0.0179	195.25	845.49	4
REDUCED HOURS STAFF	3	5.60	0.3125	0.2857	0.0179	26.00	168.88	
REDUCED HOURS STAFF	1	5.60	0.3125	0.2857	0.0179	13.00	28.15	
RESIDENTS	18	9.93	0.2053	0.0179	0.0179	41.00	5693.68	7
INTERNAL MEDICINE INTERNS	7	5.74	0.1667		0.0001	24.00	937.78	5
TRANSITIONAL INTERNS	14	5.74	0.1667		0.0001	21.00	1641.11	5
OB/GYN INTERNS	4	5.74	0.1667		0.0003	46.00	1027.09	5
CLINIC TOTAL							12535	

Appendix E
Table 9
Results from the Pediatric Clinic

PEDIATRIC CLINIC								
PEDIATRIC CLINIC								
	Providers	Average Daily	Percentage of Day Lost To Other Functions					Average
	Available	Productivity	Administrative	Teaching	Research	Available Days	Total	Days TDY
CHIEF	1	11.51	0.6439	0.2080	0.0019	195.50	328.98	24
NON-PROFIS STAFF	9	24.17	0.0892	0.2625	0.0089	95.70	13309.29	6
FULL TIME STAFF	1	24.17	0.0892	0.2625	0.0089	239.25	3697.02	6
ADOLESCENT STAFF	2	24.17	0.0892	0.2625	0.0089	143.55	4436.43	6
PROFIS STAFF	5	24.17	0.0892	0.2625	0.0089	87.70	6775.95	6
CIVILIAN STAFF	3.6	24.17	0.0892	0.2625	0.0089	223.25	17692.19	0
3D YEAR RESIDENTS	4	17.83	0.1	0	0.05	48.75	2782.31	8
2D YEAR RESIDENTS	4	17.83	0.1	0	0.05	65.00	3709.74	8
ARMY INTERNS	4	14.54	0.0267			65.62	3714.70	6
NAVY INTERNS	2	14.54	0.0267			82.02	2321.69	6
TRANSITIONAL INTERNS	1.07	14.54	0.0267			16.40	250.03	6
MILITARY NP	1	16.98	0.1607			214.25	3053.80	5
CIVILIAN NP	1	16.98	0.1607			224.25	3196.34	5
CLINIC TOTAL							**65268**	

Appendix E
Table 10
Results from the Emergency Room/Acute Care Clinic

EMERGENCY ROOM/ACUTE CARE CLINIC								
	Providers	Average Daily	Percentage of Day Lost To Other Functions					Average
	Available	Productivity	Administrative	Teaching	Research	Available Day	Total	Days TDY
CHIEF	1	11.51	0.6439	0.2080	0.0019	195.50	328.98	24
PROFIS STAFF	6	13.38	0.0089	0.2865		195.25	11046.20	4
CTMC PROFIS STAFF	1	15.69	0.0178			192.25	2961.90	4
CIVILIAN	2	13.38	0.0089			210.25	5576.88	0
CONTRACT	3.5	13.38	0.0089	0.2865		104.25	3440.45	0
TRANSITIONAL INTERNS	31	7.01	0.0178			36.00	7689.90	6
SURGERY INTERNS	6	7.01	0.0178			72.00	2976.73	6
MILITARY PAs	1	10.32	0.0313			218.25	2122.29	1
CIVILIAN PAs	6.8	10.32	0.0313			223.25	15179.51	1
CLINIC TOTAL							**51323**	

Appendix E
Table 11
Results from the Consolidated Troop Medical Clinic

CONSOLIDATED TROOP MEDICAL CLINIC								
	Providers	Average Daily	Percentage of Day Lost To Other Functions					Average
	Available	Productivity	Administrative	Teaching	Research	Available Days	Total	Days TDY
CHIEF	1	11.51	0.6439			195.50	801.30	7
PROFIS STAFF	3	15.68	0.0178			192.25	8885.19	7
CIVILIAN PAs	3	16.08	0.0535			217.25	9919.71	7
MILITARY PAs	1	16.08	0.0535			192.25	2926.07	7
CLINIC TOTAL							**22532**	

Appendix E
Table 12
Results from Department Chiefs

DEPARTMENT CHIEFS								
	Providers	Average Daily	Percentage of Day Lost To Other Functions					Average
	Available	Productivity	Administrative	Teaching	Research	Available Days	Total	Days TDY
Five Primary Care Departments	5	11.51	0.6439	.2080	0.0179	195.5	1450	24
Chiefs Total							**1450**	
								5
Cardiology Chief								
Primary Care	1	12.22	0.4125	0.2875		21.43	79	
Specialty Care	1	9.62	0.4125	0.2875		42.85	124	
Primary Care Total							**1528**	

Appendix E
Table 13
Results for the Cardiology Clinic

CARDIOLOGY								
	Providers	Average Daily	Percentage of Day Lost To Other Functions					Average
	Available	Productivity	Administrative	Teaching	Research	Available Days	Total	TDY Days
PRIMARY CARE								
CHIEF	1	12.22	0.4125	0.2875		21.43	79	5
STAFF	3	5.71	0.1607	0.2143		21.33	230	6
RESIDENTS	4	2.80		.0536	0.0089	4	42	
Total							**350**	
SPECIALTY CARE								
CHIEF	1	9.62	0.4125	0.2875		42.85	124	5
STAFF	3	15.24	0.1607	0.2143		42.65	1219	6
RESIDENTS	4	5.40		0.0536	0.0089	16.00	325	
Total							**1668**	

Appendix E
Table 14
Comparison of Male and Female Daily Productivity By Provider Type

	AVERAGE PRODUCTIVITY BY MALE AND FEMALE PROVIDERS					
		PRIMARY CARE		EMERGENCY ROOM	CONSOLIDATED	DEPARTMENT
	WOMEN'S HEALTH	INTERNAL MEDICINE	PEDIATRICS	ACUTE CARE	TROOP CLINIC	CHIEFS
STAFF						
Male	20.00	4.79	25.78	13.89	16.74	13.69
Female	None Surveyed	6.77	22.97	13.00	9.30	8.16
RESIDENTS						
Male	25.53	11.42	17.83			
Female	24.00	9.33	None Surveyed			
INTERNS						
Male	17.79	6.70	15.33	7.27		
Female	23.00	None Surveyed	13.36	6.67		
NURSE PRACT						
Male	None Surveyed		None Surveyed			
Female	17.42		16.98			
PAs						
Male				13.97	15.43	
Female				11.83	17.71	

Appendix E
Table 15
Calculated HEDIS Efficient Utilization for Fiscal Year 1995 in Visits

PROJECTED EFFICIENT UTILIZATION FOR FISCAL YEAR 1995							76
		HEDIS				HEDIS	
	Population	Utilization	Utilization		Population	Utilization	Utilization
Year Group	FY 95	Visits/000	in Visits		FY 95	Visits/000	in Visits
Females 0-14 Years				**Males 0-14 Years**			
Active Duty							
Dependent of Active Duty	5063	3.36	17011.68		5082	3.583	18208.81
Retiree							
Dependent of Retiree	1430	3.36	4804.8		1453	3.583	5206.099
Dependent Survivor	84	3.36	282.24		93	3.583	
Other	149	3.36	500.64		134	3.583	480.122
Total Visits (0-14)			**22599.36**				**23895.03**
Females 15-19 Years				**Males 15-19 Years**			
Active Duty	91	2.534	230.594		619	1.755	1086.345
Dependent of Active Duty	942	2.534	2387.028		216	1.755	379.08
Retiree							
Dependent of Retiree	1273	2.534	3225.782		599	1.755	1051.245
Dependent Survivor	97	2.534	245.798		41	1.755	71.955
Other	40	2.534	101.36		10	1.755	17.55
Total Visits (15-19)			**6190.562**				**2606.175**
Females 20-44 Years				**Males 20-44 Years**			
Active Duty	1682	3.677	6184.714		10733	2.037	21863.12
Dependent of Active Duty	6245	3.677	22962.865		435	2.037	886.095
Retiree	61	3.677	224.297		1347	2.037	2743.839
Dependent of Retiree	2608	3.677	9589.616		634	2.037	1291.458
Dependent Survivor	198	3.677	728.046		75	2.037	152.775
Other	169	3.677	621.413		112	2.037	228.144
TotalVisits (20-44)			**40310.951**				**27165.43**

Appendix E
Table 15
Calculated HEDIS Efficient Utilization for Fiscal Year 1995 in Visits

		HEDIS				HEDIS	77
	Population	Utilization	Utilization		Population	Utilization	Utilization
Year Group	FY 95	Visits/000	in Visits		FY 95	Visits/000	in Visits
Females 45-64 Years				**Males 45-64 Years**			
Active Duty	47	4.362	205.014		400	3.365	1346
Dependent of Active Duty	359	4.362	1565.958		39	3.365	131.235
Retiree	75	4.362	327.15		6476	3.365	21791.74
			0				
Dependent of Retiree	5624	4.362	24531.888		18	3.365	60.57
Dependent Survivor	908	4.362	3960.696		8	3.365	26.92
Other	40	4.362	174.48		30	3.365	100.95
Total Visits (45-64)			**30765.186**				**23457.42**
Total By Sex			**99866.059**				**77124.05**
Grand Total	**176990.1**						

Appendix E
Table 16
HEDIS Projected Efficient Utilization for Fiscal Year 1996 in Visits

HEDIS PROJECTED EFFICIENT UTILIZATION FOR FISCAL YEAR 1996							78
		HEDIS				HEDIS	
	Population	Utilization	Utilization		Population	Utilization	Utilization
Year Group	FY 96	Visits/000	in Visits		FY 96	Visits/000	in Visits
Females 0-14 Years				**Males 0-14 Years**			
Active Duty							
Dependent of Active Duty	4017	3.36	13497.12		4226	3.583	15141.76
Retiree							
Dependent of Retiree	1444	3.36	4851.84		1527	3.583	5471.241
Dependent Survivor	155	3.36	520.8		154	3.583	551.782
Other	114	3.36	383.04		105	3.583	376.215
Total Visits (0-14)			19252.8				21541
Females 15-19 Years				**Males 15-19 Years**			
Active Duty	99	2.534	250.866		554	1.755	972.27
Dependent of Active Duty	792	2.534	2006.928		410	1.755	719.55
Retiree							
Dependent of Retiree	1237	2.534	3134.558		962	1.755	1688.31
Dependent Survivor	106	2.534	268.604		73	1.755	128.115
Other	25	2.534	63.35		22	1.755	38.61
Total Visits (15-19)			5724.306				3546.855
Females 20-44 Years				**Males 20-44 Years**			
Active Duty	1617	3.677	5945.709		9086	2.037	18508.18
Dependent of Active Duty	4957	3.677	18226.89		559	2.037	1138.683
Retiree	63	3.677	231.651		1447	2.037	2947.539
Dependent of Retiree	2650	3.677	9744.05		977	2.037	1990.149
Dependent Survivor	274	3.677	1007.498		165	2.037	336.105
Other	120	3.677	441.24		72	2.037	146.664
Total Visits (20-44)			35597.04				25067.32

Appendix E
Table 16
HEDIS Projected Efficient Utilization for Fiscal Year 1996 in Visits

		HEDIS				HEDIS	79
	Population	Utilization	Utilization		Population	Utilization	Utilization
Year Group	FY 96	Visits/000	in Visits		FY 96	Visits/000	in Visits
Females 45-64 Years				**Males 45-64 Years**			
Active Duty	15	4.362	65.43		321	3.365	1080.165
Dependent of Active Duty	283	4.362	1234.446		27	3.365	90.855
Retiree	74	4.362	322.788		6207	3.365	20886.56
Dependent of Retiree	5387	4.362	23498.09		18	3.365	60.57
			0				
Dependent Survivor	905	4.362	3947.61		15	3.365	50.475
Other	23	4.362	100.326		20	3.365	67.3
	24357				26947		
Total Visits (45-64)			29168.69				22235.92
Total By Sex			89742.84				72391.09
Grand Total	162133.9						

Appendix E
Table 17
Empanelment Number Results

	TOTAL VISITS REPORTED	FISCAL YEAR 1995	PROJECTED VISITS
	FISCAL YEAR 1995 MEPRS	Visits < 65 Years Old	FISCAL YEAR 1996
Women's Health	32423		
	Minus 11% >65 Years Old ----->	28856	31420
Internal Medicine	13362		
	Minus 50% >65 Years Old ----->	6681	12535
Pediatrics	57646		
	Minus Specialty Visits ----->	54760	65268
ER/Acute Care Clinic	64484		
	18% >65 Years Old (Not Minused)-->	64484	51323
Troop Medical Clinic	22515		
	Unchanged ----->	22515	22532
Total		177296	183078
Total MEPRS <65	177296		
Total CHAMPUS	136957		
Total Actuals FY 95	**314253**		
		1.775540991	
HMO Effficient Utilization		287868.917	
in Visits (Table 14)	**176990**		
Moral Hazard	**77.55%**		
Projected FY 96 Available Visits	**183078**		
		Percent of Demand Met	**0.6360**
Projected FY 96 Demand	**287868**		
Projected FY 96 Population	**51304**		
Empanelment Number	**32628**		

Appendix E
Table 18
Demand Met By the Cardiology Clinic

CARDIOLOGY CLINIC			
	TOTAL SPECIALTY	FY 95 POPULATION	VISITS PER PERSON
	CARE VISITS FY 95	< 65 YEARS OLD	PER YEAR
	4124	53922	.0765
	FY 96 PROJECTED	PROJECTED	PROJECTED DEMAND
	POPULATION < 65	FY 96 CAPACITY	
	51304	1668	3924
	PERCENT OF		
	DEMAND MET	42.51	

Appendix F
Sample Data Collection Spreadsheet

SAMPLE DATA COLLECTION WORKSHEET												
	RANK	SEX	CLINIC	DATE	# OF PRIMARY CARE PATIENTS	HOURS IN PRIMARY CARE	HOURLY RATE	VISITS/TRMT DAY	ADMIN MINS LOST/DAY	TEACHING MINS LOST/DAY	RESEARCH MINS LOST/DAY	DAYS SPENT TDY/YEAR
PROVIDER NAME												
STAFF												
JONES												
RESIDENT												
SMITH												
INTERN												
DOE												
PHYSICIAN ASSISTANT												
REED												
NURSE PRACTITIONER												
RODRIGUEZ												

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